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Noteworthy ornithological records from Rondônia, Brazil, including a first country record, comments on austral migration, life history, taxonomy and distribution, with relevant data from neighbouring states, and a first record for Bolivia

by Andrew Whittaker

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Located in the south-west of Brazil's immense Amazon region is the state of Rondônia. Rivers play a major role in the state's geography with the rio Madeira dissecting the western section as it flows north-east into the Amazon. Furthermore, the borders with Bolivia are defined by the rios Mamoré, Guaporé and Branco. The state's largest river, the Madeira, acts as a major barrier to many species of birds, animals and plants, which occur on only one side (Haffer 1992). Further east is the rio Tapajós, flowing north-east and forming another major physical barrier to species distribution. The area of land between these two major Amazon tributaries is known as the 'Rondônian area of endemism', and contains many unique bird taxa (Haffer 1974, Cracraft 1985). The Rondônian endemic centre encompasses almost all of Rondônia, with the exception of the extreme west, on the left bank of the rio Madeira, bordering Amazonas and Acre. The presence of this rich endemic centre makes Rondônia of very high conservation importance, due not only to the large number of endemics but also the extremely high indices of deforestation (Fearnside 1987, 1989). Thus the fauna and flora of Rondônia are some of the most threatened within all of Brazilian Amazonia.

Little has been published on the avifauna of Rondônia. Natterer collected along the rios Madeira and Guaporé, whilst von Pelzeln (1868–1871) and Hoffmann concentrated along the lower rio Ji-Paraná and rio Madeira (Hellmayr 1910). More recently, intensive ornithological field work was conducted along the middle rio Ji-Paraná (or 'Machado' as it is known locally), at Cachoeira Nazaré (09°44'S, 61°53'W) and Pedra Branca (10°02'S, 62°06'W) by Stotz *et al.* (1997), resulting in



Figure 1. Rondônia illustrating the main survey sites and major collecting sites referred to in the text. State boundaries and major rivers are marked. Stars mark the study sites; 1) Paakas Palafitas Lodge, 2) Fazenda Rancho Grande, 3) Taquaras *campina*, 4) Cachoeira Nazaré, 5) Perda Branca, and 6) Parque Estadual de Guajará-Mirim. Note the scale is too small to depict either Palafitas Island or Nova Colonia.

several noteworthy discoveries, including the remarkable Rondônia Bushbird *Clytoctantes atrogularis*, new to science (Lanyon *et al.* 1990).

Here I present important ornithological records made during field trips to Rondônia, including the first documented Subtropical Doradito *Pseudocolopteryx flaviventris* for Brazil and the first documented Pearly-breasted Conebill *Conirostrum margaritae* for Bolivia. Species accounts include life-history data for several little-known species (with additional non-Rondônian data included where deemed important), comments on austral migrants, taxonomy and distributional information, including range extensions and new state records. References

consulted for prior Rondônia records, in addition to those already listed above, were (Peters 1940, 1948, 1951, 1968, 1979a,b, Pinto 1944, 1978, Ridgely & Tudor 1989, 1994, Whittaker 1996a).

Austral migrants are species that breed in southern temperate South America and during the austral winter move north (Sick 1985, 1993, Chesser 1994). In general, such migrants arrive in Amazonia in March–May and depart in September–November. The presence of several austral migrants can be relatively hard to determine in Amazonia due to the existence of local resident populations; on arrival they merely augment existing populations and often go unrecorded. For example, Tropical Kingbird *Tyrannus melancholicus* is resident throughout Amazonia, making it near impossible to determine not only when austral migrant kingbirds arrive but also how many are involved, how long they remain and when they depart south. Often the only clue to the presence of migrants in Amazonia are flocks of 10–20 Tropical Kingbirds perched high in treetops along rivers during the austral winter (pers. obs.).

Methods and study sites

Survey work involved both audio and visual methods, with a significant emphasis on vocal identification. Voucher tape-recordings were made using a Sony TCM 5000 and a Sennheiser ME 66 microphone. All tape-recordings will be archived at the British Library National Sound Archive. Observations were made using 10 x 42 binoculars and by using playback to confirm visual identifications.

Survey work focused on three main sites (Fig 1): five trips were made to Fazenda Rancho Grande, near Ariquemes, in 1989–1995; an eight-day rapid ornithological assessment of the Parque Estadual Guajará-Mirim was conducted in April 1995; and two visits to Pakaas Palafitas Lodge and the surrounding area were made, on 3–12 July 2002 and 18–26 June 2003. I also include opportunistic observations made en route from Porto Velho to Guajará-Mirim at Taquaras and along the rio Guaporé south of Pimenteiras do Oeste. Details of the survey sites and their vegetation are listed below.

Fazenda Rancho Grande near Ariquemes (10°17'S, 62°52'W): primary upland *terra firme* forest, pastures and second-growth forest and some river-edge habitats. Continued deforestation in neighbouring fazendas has reduced the size of this forest and it has become more isolated from virgin forest.

Parque Estadual de Guajará-Mirim (10°50'S, 64°85'W): surveys were made along a recently cut road running east to the rio Formoso. Habitat consisted of primary upland *terra firme* with some river-edge, and microhabitats of *Guadua* bamboo and extensive dense vine tangles. Some small hills and bluffs occur in the *terra firme*, with rocky outcrops of 100–200 m supporting drier, stunted semi-deciduous forest. What appeared to be recent illegal entry had prompted road cutting, timber extraction and hunting within the park's boundaries.

Paakas-Palafitas Lodge (10°51'S, 65°16'W): situated 10 km south-east of Guajara-Mirim at the confluence of the rio Mamore (white water) and the rio Pacaas Novos (black water). Based at the lodge, surveys were made in nearby upland *terra firme*, *varzea* and *igapo*, oxbow lakes, river bluffs, second-growth forest and cattle pasture. Much timber extraction and subsistence farming was evident (increasing in 2003) in nearby upland *terra firme*. However, large forest tracts are still connected to contiguous virgin forest.

Palafitas Island (09°74'S, 65°13'W): situated 5 km upriver of Paakas Palafitas Lodge on the rio Mamore, an unnamed river island, which for my purposes here I refer to as Palafitas Island. Habitats included sandbars (at low water), mudbanks and successional riparian habitats dominated by various pioneer plant communities and mature disturbed *varzea*. The island is uninhabited: although a small area of *Cecropia* and cane grass found burnt in 2002, the same area was undisturbed in 2003.

Nova Colonia (09°01'S, 65°80'W): a small settlement c.12–15 km along the rio Pacaas Novos with three families along a small left bank (black-water) tributary. Here I surveyed *igapo* and primary upland *terra firme* and second-growth forests.

Taquaras campina (09°44'S, 65°13'W): near the small town of Taquaras. Here I surveyed *campina* forest (white-sand forest on a poorly drained sandy/clay soil) with stunted trees.

Habitats

Here I present a brief description of the various habitats and microhabitats that I surveyed and that are mentioned in the species accounts. Vegetation classification is based on Stotz *et al.* (1996), where more detailed floristic species lists typical of each habitat can be found.

Forested habitats

Tropical Lowland Evergreen Forests. Forests below 900 m, where rainfall is greater than 2,000 mm pa, grow where soils are suitable, sufficiently deep, well drained and never flooded.

Upland *terra firme* forest has canopy heights of 30–40 m with emergents reaching 50–60 m and a closed canopy. The understory was rather open and contained many spiny palms. *Terra firme* is renowned for the extraordinary diversity of plant species (Gentry 1990). Microhabitats found within these forests included *Guadua* bamboo, treefall gaps, vine tangles and stream sides. This forest type is the most abundant habitat and therefore the most commonly surveyed.

Flooded Tropical Evergreen Forests. Flooded permanently or annually, most such forests are structurally and floristically similar to upland forests, but differ in supporting flood-tolerant trees and undergrowth plants. For more detailed information see Prance (1979).

Floodplain *várzea* is found only along Amazonian white-water rivers and is flooded annually for several months. This habitat is sparse, being found only on Palafitas Island, where the canopy is 20–30 m with a typically open understorey and dense *Heliconia* patches, vine tangles and many bromeliads, with some human disturbance.

Floodplain *igapó* forest is primarily found on sandy soils bordering black-water and clear-water rivers of Amazonia. Typically flooded for 5–6 months or longer p.a., this forest type occurs along the rio Pacaás Novos and its tributaries. At Novo Colonia it varied greatly, from tall forest with a 20–30 m-high canopy to a denser, lower 6–10 m-high canopy nearer the river. Both types have a very open understorey with few or no shrubs. Denser vine tangles were found along smaller streams and several areas of standing water.

Filled-in floodplain lakes (swamp forests), in my survey refers to an oxbow lake containing several mature stands of *Ficus* and large clumps of *Cecropia*, and small-leaved bamboos at the edge of standing water. Around the lake are low stunted bushes, clumps of small trees, 5–10 m tall, and many flooded sedges.

River-edge (and river island) forests. River-edge are early successional forests bordering rivers, and sometimes referred to as river bluffs. They replace riparian shrubby thickets and, in upper Amazonia, are regularly flooded, although run-off is rapid and vegetation is rarely submerged for more than a few days or weeks. This habitat contains stands of trees dominated by *Cecropia*, some *Ficus* and much *Gynerium* (Gramineae).

River islands are dynamic, constantly changing size and shape. Thus, a variety of successional habitats can be found, depending on the age of the island (Remsen & Parker 1983). I surveyed a mature island, with vegetation types from cane grass, *Tessaria*, *Mimosa* and *Salix* scrub, clumps of *Cecropia* and 20–30 m-tall mature *várzea* with some vine tangles.

Gallery forests. These occur along watercourses throughout drier regions (annual rainfall less than 1,600 mm), where other conditions (e.g. fire) inhibit the growth of woody vegetation away from the rivers.

White-sand forests. Forest and scrub on white sand in Amazonia. These occur very patchily, covering c.60,000 km in Brazil (Pires 1974). Overall structure and composition varies greatly between sites, depending on soil type and drainage. Typically, most white-sand soils in Brazil contain virtually no clay; nutrient levels are extremely low and water retention poor. However, in my study area white-sand forests occur on weathered clays with poor drainage (pers. obs.). Edaphic conditions, especially drainage, considerably affect vegetation structure and composition (Gentry 1988). Plant endemism is high in these *campinas*, but plant diversity is low (Anderson 1981). Such white-sand forests are referred to as *varillal* or very low-stature *chamizal* in Peru (Alvarez Alonso & Whittaker 2003).

Campina is rather open scrub, with only small shrubs and trees (4–12 m), and patches of bare sand, which are usually well drained. I surveyed poorly drained *campina* on white-sand weathered clay at Taquaras *campina*, which has a 10–12 m canopy and adjacent taller *campinarana*. Low tree species diversity occurs in both areas. The *campina* has melastomes dominating the fairly open understorey, where small patches of low terrestrial bromeliads most frequently occur in the lower wetter areas.

Campinarana is closed-canopy woodland taller than *campina*, which often occurs adjacent to *campina* where soils with more nutrients and better drainage exist. This, in turn, is surrounded by upland *terra firme*, where soils are richer still, with the transition being gradual (pers. obs.). The Taquaras site has a closed canopy of 12–18 m with an open understorey and few or no shrubs.

Palm forests. Small to extensive stands of *Mauritia flexuosa* in poorly drained areas within savannas, at lake edges or along streams in Amazonia.

Second-growth forests and woodlands. Two types were surveyed: tall second growth dominated by *Cecropia* and lower shrubby vegetation dominated by *Vismia* spp. The latter is sometimes described as second-growth scrub.

Non-forest habitats

Cerrado is distinctive savanna vegetation, with tall grass and scattered low, gnarled trees. In areas of denser tree cover it is known as *cerradão*. This habitat occurs mostly in central Brazil, adjacent eastern Bolivia and north-east Paraguay.

Species accounts

AGAMI HERON *Agamia agami*

S. L. Hilty and I observed an adult and an immature at an overgrown oxbow lake at Paakas Palafitas Lodge. In response to my close approach a low guttural series of notes, presumed to be an alarm call, was repeated and tape-recorded. Zimmer & Hilty (1997) reported what must be the same voice as *uur' r' r' r'* from Amazonas, Venezuela. This unobtrusive species was recorded by Stotz *et al.* (1997) as rare along the middle rio Jiparaná.

LEAST BITTERN *Ixobrychus involucris*

A single vocalising bird was tape-recorded at an overgrown oxbow lake at Paakas Palafitas Lodge by S. L. Hilty and myself on three evenings between 20 and 25 June 2003. This apparently represents a new state record. The Amazonian distribution of the species is poorly understood as it inhabits dense marshes and, unless vocal, is easily overlooked.

ORINOCO GOOSE *Neochen jubata*

At least two territorial pairs were present at Palafitas Island, in the rio Mamoré, during July 2002 and June 2003. Birds were tape-recorded and observed entering forest, where they were presumed to be nesting in July 2002. Reported as rare on the middle rio Jiparaná (Stotz *et al.* 1997). Once widespread in Brazil, Orinoco Goose is now extremely rare and very local, and mostly encountered along remote waterways with low human populations and little or no hunting pressure. In areas such as along the middle rio Juruá flocks of up to 20 were not uncommon in 1991 (Whittaker & Oren 1999).

ZONE-TAILED HAWK *Buteo albonotatus*

An adult observed mid-morning on 11 July 2002 outside Guajará-Mirim, soaring over a small serra 2 km east of the town. This is apparently the first record for Rondônia. There are few records from Amazonian Brazil, the closest being from Acre, at Cruzeiro do Sul, and along the upper rio Juruá at Porto Walter (Whittaker & Oren 1999).

ROADSIDE HAWK *Buteo magnirostris*

Surprisingly, in 2003 two subspecies were observed sympatrically at Paakas Palafitas Lodge, the darker *B. m. saturatus* and paler *B. m. magnirostris*. In plumage the darker *saturatus* was easily identified by its characteristic blackish hood, dark brown upperparts, white eye and cinnamon-rufous barring below, whereas *magnirostris* is distinctly paler above with a grey back and head, yellow eye, grey upper breast and finer tawny barring below. These differences were obvious in the field, where *saturatus* was the commonest form, with 2–4 seen daily. I recorded only one adult *magnirostris*, on 22 June 2003, perched beside the rio Pacaás Novos.

In Brazil *saturatus* occurs in Acre, Mato Grosso do Sul and Mato Grosso (Pinto 1978), with *magnirostris* throughout Amazonian Brazil. However, on 23 and 25 June 2003, I observed two adults intermediate between these two subspecies unidentified to any race or age-related plumage. This observation suggests interbreeding where the two forms are sympatric. Possibly *saturatus* has recently colonised Rondônia from the south, following rapid deforestation in recent decades, permitting the two forms to come into contact. Further research around Guajará-Mirim is essential to clarify if the two subspecies do interbreed.

LONG-WINGED HARRIER *Circus buffoni*

A dark-morph adult was videotaped quartering over early-successional growth at Palafitas Island on 10 July 2002. This appears not only to be a new state record but also the first for Amazonian Brazil, and certainly represented an austral migrant. Austral migrants in Brazil are principally known from Rio Grande do Sul and Santa Catarina (Sick 1985), but the nearest records to Rondônia are from Mato Grosso, in the northern Pantanal, and Chapada dos Guimarães where this harrier is present only during the austral winter (pers. obs.).

CRYPTIC FOREST-FALCON *Micrastur mintoni*

This recently described species (Whittaker 2002) was observed and tape-recorded in *terra firme* near Paakas Palafitas in June 2003 and at Nova Colonia in July 2002. It was also recorded in seasonally flooded *igapó* and in second growth bordering *terra firme* at Novo Colonia. Two specimens, previously identified as Lined Forest-falcon *M. gilvicollis*, from Cachoeira Nazaré (Stotz *et al.* 1997) are, in fact, *mintoni* (pers. obs.). Lined Forest-falcon occurs in Rondônia only west of the rio Madeira, in *terra firme* (Whittaker 2002).

ORANGE-BREASTED FALCON *Falco deiroleucus*

I located an adult (presumed male) of this rare falcon on 15 July 2000, while leading a bird tour with S. L. Hilty, on the rio Guaporé, south of Pimenteiras do Oeste, Rondônia. This is seemingly the first state record, with the nearest known records being from Mato Grosso, where K. J. Zimmer and I observed an adult at Chapada dos Guimarães on 13 September 1996.

For many years, Orange-breasted Falcon was considered absent from central Amazonia (Cade 1982), but recent reports have confirmed that it inhabits central Amazonian Brazil (Whittaker 1996b). The Rondônian record and other unpublished Amazonian records confirm this: K. J. Zimmer and I observed what was presumably the first record for Roraima, a subadult on a river island in the rio Branco, 6 km north of Boa Vista, on 1 November 1994, and also an adult male at the Serra dos Carajás, Pará, in February 2003.

Documented hunting attempts and prey of *F. deiroleucus* are few. S. L. Hilty and I observed the male still-hunting from the crown of a dead 25–30 m emergent on a river bluff of the rio Guaporé. The falcon launched itself from the 25 m-perch in very fast direct flight, initially in a sharp 45°-dive until it reached *c.*10 m above the water, where it adopted powerful horizontal dashing flight for *c.*350–400 m towards a Great Kiskadee *Pitangus sulphuratus*. The flycatcher was flying across the river, but presumably noted the approaching falcon and thus evaded its upward stoop. The falcon thereafter immediately returned to its original perch. This had been assumed to be the most common hunting technique (Bierregaard 1994). Prey are mostly medium-sized to large birds, including pigeons, parrots, parakeets, swifts and martins (Bierregaard 1994), but smaller prey such as insects have been recorded (Whittaker 1996b). I also confirmed an adult female taking a Crested Oropendola *Psarocolius decumanus* from a photograph taken by Jackie Dann, in Bolívar, Venezuela.

LARGE-BILLED TERN *Phaetusa simplex*

I observed this common and widespread species on several occasions following both Tucuxi *Sotalia fluviatilis* and Amazon River Dolphin *Inia geoffrensis* pods along the rio Mamoré at Paakas Palafitas Lodge. Birds were seen plunge-diving near these dolphins and taking fish disturbed by the dolphins or pieces of fish left by them. I have noted this behaviour frequently throughout Amazonian Brazil on

all major rivers, where the birds follow dolphins for long periods swooping or plunge-diving for prey disturbed by them. Large-billed Terns seem to more frequently engage in this behaviour when following the larger *Inia geoffrensis*, although further observations are needed to quantify this.

CRIMSON-BELLIED PARAKEET *Pyrhura perlata*

Regularly observed in small flocks at Fazenda Rancho Grande by K. J. Zimmer and myself. In late-January 1995 six including two apparent immatures were observed food begging (head-bobbing). The immatures mostly differed in lacking the bold crimson belly, instead showing just a few sparse crimson feathers on the belly. Crimson-bellied Parakeet is sympatric with Hellmayr's Parakeet *P. amazonum* (Joseph 2002), a Brazilian endemic, at all three sites but was the less common of the two. Flight calls of these *Pyrhura* are so similar, and vary according to the number of birds calling, that the less common Crimson-bellied can be overlooked. However, when Crimson-bellied Parakeet vocalises from a perch it is fairly easily separated by voice from Hellmayr's Parakeet, instead sounding most similar to Pearly Parakeet *P. lepida*.

RUFOUS-VENTED GROUND-CUCKOO *Neomorphus geoffroyi*

This rarely seen species was observed on three occasions for a total of *c.* 20 minutes in *terra firme* at Parque Estadual de Guajará-Mirim, on 24–25 April 1995. During my observations I noted the following details: mantle glossy green, wings greenish with purplish flight-feathers, tail (in good light) metallic purplish with metallic greenish tips, forehead scaled buff-brown, hindcrown metallic green and hindneck boldly scaled green with less obvious pale buff, heavy buff scaling reaching to the black breast-band, and below plain buff with a rufous ventral area. Soft parts: irides dull creamy white, bill horn and legs grey. Only after three close views was I able to note the bird's bright blue bare post-orbital skin; thus, this field mark could be easily overlooked in shaded forest understorey. My plumage description most closely accords with nominate *geoffroyi*, which is known from specimens taken along the rio Madeira at Calama and Maruins (Peters 1940).

Little has been published on the behaviour of this species. I initially observed it foraging on the forest floor below an understorey mixed-species flock of antshrikes (*Thamnomanes*, *Thamnophilus*), antwrens (*Myrmotherula*) and Rose-breasted Chat *Granatellus pelzelni*. The *Neomorphus* was confiding when I was still, but any movement would cause it to raise and depress its long, glossy metallic green crown feathers. I also observed the bird scratching its large bill with its feet, rather like a domestic chicken. It kept entirely on the forest floor, where it walked slowly and deliberately, and without warning would suddenly run at great speed (quicker than anticipated), before abruptly pausing to catch unidentified prey in the leaf litter. The running bird was extremely fast and agile, even moving thus through dense vine tangles. It also habitually lowered the head from the normal position just before running until it stopped. The ground-cuckoo seemed to prefer the thick cover of

fallen vine tangles, which are fairly widespread in parts of this forest. Once I saw the bird crouch on the ground, quivering its wings and opening the bill, perhaps suggesting the presence of a second bird.

The voice of the nominate form, to my knowledge, is unknown. I only twice heard loud bill-clapping when the bird ran directly towards me, to within 3 m. I played the voice of Rufous-winged Ground-cuckoo *N. rufipennis* without eliciting any response.

Further research is urgently required to properly assess species limits and basic ecological requirements among this ground-cuckoo's disjunct taxa. Significant habitat destruction is occurring or has occurred throughout the species' range, particularly where *N. g. squamiger* (in the lower rio Tapajós), *N. g. maximiliani* (Bahia) and *N. g. dulcis* (Espírito Santo to Rio de Janeiro) occur. All are Brazilian endemics and warrant immediate research and conservation attention. Documentation of the threatened Banded Ground-cuckoo *N. radiolosus* from Ecuador and Colombia in lowland *terra firme* confirms this species to be extremely sensitive to habitat disturbance (Collar *et al.* 1992).

BURROWING OWL *Speotyto cunicularia*

One was observed along the road from Porto Velho to Fazenda Rancho Grande, on 24 January 1995, and at least two pairs in cattle pasture near Paakas Palafitas Lodge, daily in June 2003. The species is presumably a recent colonist in Rondônia following large-scale deforestation that has transformed vast areas into cattle pasture. I am unaware of any previous records from the state, and my observations appear to be the first. Very few records are available for this open-country owl from rainforest areas in the Amazon basin. The closest are both from Amazonas, where deforestation has made way for large-scale cattle ranches, mostly south of the Amazon. However, north of the Amazon, some 80 km north of Manaus, a resident individual was located at one of three large 15,000-ha partially deforested cattle ranches, during 1992 to 1994 (Cohn-Haft *et al.* 1997), and south of the Amazon I recorded a pair 35 km south of Careiro, on 28 September 2003.

SAND-COLOURED NIGHTHAWK *Chordeiles rupestris*

A flock of 50+ was present on recently exposed sand and mudbanks on Palafitas Island, in the rio Mamoré, in both July 2002 and June 2003. Water levels were falling (an annual event at this season), and these usually silent, crepuscular birds were very vocal and active even in mid afternoon, as nest sites on exposed sandbars became available. Displaying males were chasing one another and calling loudly in flight. Displaying birds were easily recognised as males, as on landing they revealed their striking white throats while uttering their rather musical gurgling songs.

NACUNDA NIGHTHAWK *Podager nacunda*

A lone bird was observed day-roosting on a sandbar on Palafitas Island on 10 July 2002. Upon my approach the bird opened its eyes, raised its head and fluffed out its

throat, revealing its white throat patch (confirming it to be a male). It then proceeded to give a single deep gruff call, which was repeated every 7–10 seconds before it flushed, landing *c.*30 m distant. The species is a well-known austral migrant to Amazonia (Sick 1985) and I assume this individual too was an austral migrant. Nearest breeding records are from northern Mato Grosso, where I have recorded breeding in September at Chapada dos Guimarães (unpubl. pers. obs.).

SILKY-TAILED NIGHTJAR *Caprimulgus sericocaudatus*

This little-known nightjar was tape-recorded at Parque Estadual Guajará-Mirim on the clear moonlight night of 25th and dawn of 26 April 1995. Four to five well-spaced birds were heard singing in primary upland *terra firme* dotted with a few bare rocky outcrops. This record appears to represent the first for Rondônia.

In response to playback, a bird flew 150–200 m from a forest clearing and landed *c.*8–12 m above me in a tall sapling. This male then started singing from a fairly concealed perch, a rather melodious two-note call, repeated monotonously every 1–2 seconds for periods of up to three minutes. The bird tossed its head slightly upwards when singing. It was noted to be overall dark, but I noted a distinct broad rufous collar and heavy white spotting on the upper breast.

Comparisons with tape-recordings of nominate *sericocaudatus* from Argentina and *mengeli* from Ucayali, Peru (Hardy *et al.* 1989), confirmed the Rondônian birds to pertain to the latter. Subspecies *mengeli* is known from very few Brazilian localities, with Amazonian specimens from Santarém, Pará (Pinto 1978, Sick 1985), and I tape-recorded a singing male at rio Cristalino, Alta Floresta, Mato Grosso, at a clearing in primary upland *terra firme*. This is the sole record during 15 years of intensive field work at the site (pers. obs.).

SCISSOR-TAILED NIGHTJAR *Hydropsalis brasiliiana*

An adult male was almost overlooked as a Ladder-tailed Nightjar *H. climacocerca* when flushed from a day roost on Palafitas Island on 10 July 2002. The bird was disturbed from low bushes in early-successional growth and flushed *c.*10 m to perch on an exposed horizontal branch 1 m above ground in a young sapling. The species probably undertakes rather local movements or perhaps some are austral migrants, as it is not usually found on Amazonian river islands. Along the rio Mamoré, as in most of Amazonia, *H. climacocerca* is the common riverine nightjar, being often fairly numerous on white-water river islands (pers. obs.). Movements of *H. brasiliiana* are poorly known in Brazil, but the race *furcifera* disappears from many areas of Rio Grande do Sul during the austral winter (Belton 1984).

LONG-TAILED POTOO *Nyctibius aethereus*

One heard on 28 January 1995 in *terra firme* at Rancho Grande, Ariquemes. Reported to be a rare resident by Stotz *et al.* (1997) at Cachoeira Nazaré from river-bluff forest. Unless its vocalisations are known and nocturnal surveys undertaken this low-density species easily goes unrecorded.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

A pair was observed roosting in a nest positioned under a building beside the rio Mamoré, at Paakas Palafitas Lodge, in late-June 2003. The nest was a c.1-m-long vertical, straight tube with a diameter of 10–12 cm and the entrance at the bottom, located 12 m up on the underside of a large cement roof supported by stilts. The nest was constructed of yellow plant fibres neatly cemented together. Nesting in Brazil was recorded by Sick (1985), who reported nests attached to tree trunks and even on a roof inside a house. I observed a nest in Alagoas in January 2004, located in the apex of the eaves of a chalet. Sick (1947) also stated that nest length varies from 30 cm to 1 m.

RUFOUS-NECKED PUFFBIRD *Malacoptila rufa*

Only two records of this rarely encountered and poorly known puffbird were made, in *terra firme* understorey at Rancho Grande, in May 1990, by R. S. Ridgely, G. Tudor and myself, and by K. J. Zimmer, on 29 January 1993. Stotz *et al.* (1997) recorded this puffbird as common at both Cachoeira Nazaré and Pedra Branca. However, this included mist-net captures (1,450 mist-netting days). Mist-netting is one of the most reliable methods of censusing these forest puffbirds, enabling a true impression of their abundance (pers. obs.).

Little is known about the behaviour of Rufous-necked Puffbird. Singles or widely spaced pairs still-hunt from perches, normally at 2–10 m, occasionally higher, within forest, and if flushed fly silently in a normally straight line before landing 15–20 m distant. On landing they slightly spread their tail-feathers and nervously jerk the tail sideways (either to left or right) from the normal vertical position. These movements continue until the tail is c.15–20° from the vertical, and then return to the latter, before jerking 15–20° to the opposite side. Similar behaviour has been noted among nunlets *Nonnula* (Whittaker *et al.* 1995), and continues while observers are nearby. Such behaviour might be used to visually communicate danger between pairs (pers. obs.). Their still-hunting behaviour, combined with the fact that this puffbird seemingly vocalises infrequently (or only for short periods, especially around dawn and dusk) and its voice is quiet (and easily overlooked as an insect), means that the species is very easily missed during field surveys.

The voice is also poorly known. I tape-recorded what I presume to be the song of the subspecies *brunnescens*, first at Alta Floresta, Mato Grosso, on 12 November 1996, and subsequently twice along the rio Roosevelt, Amazonas, a series of high, thin notes forming a 4–5-second metallic trill (slowing slightly at the end), repeated every 20–25 seconds, which is similar to the only description of the species' voice (Zimmer *et al.* 1997). This loudsong is similar to that of White-whiskered Puffbird *M. panamensis* and could be overlooked as an odd-sounding Golden-crowned Spadebill *Platyrinchus coronatus* song at distance (pers. obs.). Both K. J. Zimmer (pers. comm.) and I, using a copy of my recording, have solicited silent perched *M. rufa* in Mato Grosso (n nominate) and in Amazonas to respond using the same vocali-

sation. I also recorded a different voice in response to playback of the song, from two territorial birds along the rio Roosevelt. This voice was a louder series of fast trilled notes, with an emphatic and abrupt, louder final note, quickly repeated 8–9 times during an 11-second period, and given once or occasionally twice immediately following playback of the loudsong. The two birds approached me to within a few metres in the understorey. I assume agitated birds at territorial boundaries use this voice naturally. During their approach I noted that they seemed to puff out the breast feathers, making their striking pure white upper-breast patches appear larger and more prominent in the poorly lit understorey. Such behavior might be used in territorial disputes. Several other forest-dwelling *Malacoptila* have white upper-breast patches and inhabit the dark understorey of tropical forests (pers. obs.). Call notes of *M. rufa* are described as a high, thin descending *seeee...* (Zimmer *et al.* 1997), almost identical to alarm calls I have noted from Semi-collared *M. semicincta*, Crescent-chested *M. striata*, White-chested *M. fusca*, White-whiskered and Black-streaked Puffbirds *M. fulvogularis* (pers. obs.).

K. J. Zimmer (pers. comm.) observed a bird at Rancho Grande attending a small swarm of *Labidus* ants also attended by Black-faced Antbird *Myrmoborus myotherinus*, Scale-backed Antbird *Hylophylax poecilinota* and a pair of Warbling Antbirds *Hypocnemis cantator*, but no obligate ant followers. I also observed this puffbird feeding at the head of a large *Eciton* ant swarm at Amazonia National Park, Amazonas, with many obligate antbirds in attendance, including Harlequin Antbird *Rhegmatorhina berlepschi* and Black-spotted Bare-eye *Phlegopsis nigromaculata*, as well as Barred Forest-falcon *Micrastur ruficollis* and Dark-winged Trumpeter *Psophia viridis*.

There are apparently no recorded breeding observations of this puffbird. In upland *terra firme* at the rio Cristalino, Mato Grosso, on 8 September 2000 and 4 August 2003, after flushing birds from the forest floor, I located two nest burrows. The first was in a large bamboo patch only a few metres from a well-trodden trail. The second was in patchy bamboo and vine tangles just 30 cm from an infrequently used trail. Both were in flat terrain but the burrow entrance was constructed on a slight gradient. As in other *Malacoptila* the entrance was reinforced by *c.*30–50 dry, dead twigs of 2–10 cm, although one was 30 cm long. I have also noted such nest protection in White-chested and Crescent-chested Puffbirds, and Stiles & Skutch (1989) recorded it in Costa Rica for White-whiskered Puffbird. As well as offering at least some protection from erosion, I suggest that these sticks around the entrance may act as deterrent against terrestrial predators such as snakes. In passing over the twigs they would possibly be more likely to overlook the nest than if it was a bared-sided hole on the open forest floor. Thus, these twigs possibly help reduce nest predation, increasing nest success.

I was unable to confirm if the first nest had eggs or young, but the August nest contained two *c.*7–9-day-old chicks, just in pin with their eyes open. I measured the nest tunnel, which was oval-shaped at the exit and *c.*8 x 5 cm. The burrow sloped

gently down and back for *c.* 75 cm, where it curved right, and the nesting chamber was visible, with a small amount of dry vegetation in the cup lining.

CHESTNUT JACAMAR *Galbalcyrhynchus purusianus*

Known in Brazil only from the upper rio Purús and rio Juruá, Acre (Sick 1993). My records represent both a significant range extension and the first east of the rio Madeira.

The oxbow lake behind Paakas Palafitas Lodge held a resident territorial family group of six observed daily in both years. Birds were always perched on prominent vantage points, sometimes with all group members in the same tree. Still-hunting was mostly from exposed horizontal branches, often from some of the most-exposed tall trees at the edge of the *várzea* or in lone trees within the flooded oxbow. Preferred perches seemed to be in open trees, such as *Cecropia*, affording opportunities for the mostly horizontal sallies after insects. Most sallies were over 4–8 m, but some of 20–30 m were observed. Following sallies, individuals mostly returned to the initial perch. All identified prey were *Hymenoptera* wasps, bees and sweat bees.

Playback of their voice resulted mostly in the entire group, one by one, flying in to investigate (often from some distance). Upon landing, often on the same branch, they perched side by side and gave long excited rattle calls, energetically head-bobbing with their crest feathers erect and pumping their tails. The same territorial behaviour occurs in the more widespread White-eared Jacamar *G. leucotis* after playback.

BLACK-GIRDLED BARBET *Capito dayi*

Fairly common at Fazenda Rancho Grande, where it was regularly seen by K. J. Zimmer and myself, often feeding in the midstorey or canopy on small berries and *Cecropia* catkins at *terra firme* edge. Possibly less common in forested areas at Paakas Palafitas, where observed on only three occasions in *terra firme*. Stotz *et al.* (1997) noted the species as being common on the middle rio Ji-Paraná in *terra firme*, seasonally flooded forest and river-bluff forest.

Foraging observations consisted of perch-gleans to leaf and branch surfaces, often on terminal branches in the subcanopy. Prey included a large katydid or mantis that was held in the bird's claws and repeatedly jabbed with the beak before being swallowed whole. In Mato Grosso, at the rio Cristalino, I have twice observed this species (a pair and a family group) in the understorey, foraging just above the forest floor at *Eciton* army ant swarms, where they pursued escaping arthropods in dead fallen bamboo.

CURL-CRESTED ARACARI *Pteroglossus beauharnaesii*

Fairly common in *terra firme* at Paakas Palafitas, where groups were seen near-daily. However, the species was not recorded at Rancho Grande or at the two sites

along the middle rio Ji-Paraná (Stotz *et al.* 1997), suggesting that the species may be patchily distributed in Rondônia and possibly is absent from some regions.

WHITE WOODPECKER *Melanerpes candidus*

Three were observed on Palafitas Island in July 2002 and, in June 2003, a vocalising pair was observed flying high above Pakaas Palafitas Lodge along the rio Mamoré before landing in second growth near the lodge. The distribution of this woodpecker in Rondônia is poorly known and these records may prove to be the first for the state. Within Amazonia the species seems very local, preferring *várzea* and mature river islands. Whereas in other parts of its range the species is found in patchy Atlantic Forest, it seems to be most abundant, in Brazil, in gallery forests of the Pantanal in Mato Grosso (pers. obs.).

POINT-TAILED PALMCREEPER *Berlepschia rikeri*

This Moriche Palm *Mauritia flexuosa* specialist was tape-recorded in extensive palm groves within a swampy area surrounded by cattle pasture at Paakas Palafitas Lodge. The species' distribution in Rondônia is very poorly known and it was not recorded by Stotz *et al.* (1997) at either of their study sites, although there are records from the upper rio Madeira (Pinto 1978).

DUSKY-CHEEKED FOLIAGE-GLEANER *Anabazenops dorsalis*

I tape-recorded and observed a lone individual of this bamboo specialist (Parker *et al.* 1997) in the understorey of *terra firme* at Parque Estadual de Guajará-Mirim, on 23 April 1995. This represents only the third documented locality for the species in Brazil. The others are Cachoeira Nazaré, where two specimens were collected (Stotz *et al.* 1997), and Alta Floresta, Mato Grosso, where it has been tape-recorded (Zimmer *et al.* 1997). In response to playback the bird approached closely, uttering a long series of fast chattering notes, with its white throat-feathers erect, wings partially open and drooping, and its crown feathers slightly raised. I have noted the same behaviour to playback at the rio Cristalino, Mato Grosso.

GREY-THROATED LEAFTOSSER *Sclerurus albigularis*

This forest dweller was tape-recorded and observed in *terra firme* at Parque Estadual de Guajará-Mirim, on 23 April 1995. K. J. Zimmer and I also made observations and tape-recordings of other individuals at Fazenda Rancho Grande in 1990–1995. The first Brazilian record was from Cachoeira Nazaré (Stotz *et al.* 1997) where it was described as rare, with one mist-netted in 1986. Two were recently collected at Alvorada do Oeste, Rondônia (Whittaker & Oren 1999). These Rondônian specimens apparently concern the subspecies *albicollis* (Remsen 2003) and not *kempffi*, which was only recently described from nearby Bolivia (Kratter 1997), as suggested by Stotz *et al.* (1997).

WEDGE-BILLED WOODCREEPER *Glyphorynchus spirurus inornatus*

Very common understorey inhabitant of *terra firme* at all sites. Rondônian birds refer to the subspecies *inornatus*, found south of the Amazon from the right bank of the rio Madeira to the left bank of rio Tapajós, extending south to northern Mato Grosso along the rio Roosevelt. The voice of this Brazilian endemic distinctly differs from nominate birds, strongly suggesting that more than one species is involved in *Glyphorynchus* (Marantz *et al.* 2003; pers. obs.), and that a thorough revision of its taxonomy is required. The most commonly heard voice of *inornatus* is two loud, clear penetrating notes, *TUE, TUE...* repeated every 5–8 seconds, and very unlike the commonly heard ‘sneezing’ *chief* notes of other Amazonian taxa. The complex song of *inornatus* also differs, being a more musical series, rising up the scale, with a more buzzy series of terminal notes (pers. obs.).

On 8 July 2002, while in *terra firme* at Novo Colonia I flushed an incubating *Glyphorynchus* from its nest in a hollow, broken vertical stump c.1.25 m high and 30 cm in diameter. The nest cup was c.1 m inside the stump and contained two small white eggs.

CURVE-BILLED SCYTHEBILL *Campylorhamphus procurvoides*

I tape-recorded and observed one in *terra firme* at Parque Estadual de Guajará-Mirim on 25 April 1995, presumably of the race *probatas*, which occurs on the south bank of the Amazon and east of the rio Madeira to the left bank of the rio Tapajós (Peters 1951). Parker *et al.* (1997) recorded it as rare in *terra firme* forests at Cachoeira Nazaré, with only two collected, which were the first records for Rondônia.

The voice of Curve-billed Scythebill that I tape-recorded in Rondônia was strikingly different from nominate *procurvoides*, with which I am very familiar from the north bank of the Amazon at Manaus, Amazonas. However, the Rondônian voice is identical to those I have tape-recorded at Alta Floresta, which are of the race *multistriatus* (Peters 1951) and is somewhat associated with bamboo. Tape-recordings I have made of *sanus* in southern Venezuela also distinctly differ from nominate birds and from the two south-bank forms. During extensive field work, I have found consistent and distinctly different vocal types throughout the species’ range, strongly implying that more than one species is involved. I am currently reviewing vocal data and species limits in Curve-billed Scythebill.

STRIATED ANTBIRD *Drymophila devillei*

This bamboo specialist was tape-recorded in a stand of *Guadua* bamboo near the rio Formoso at Parque Estadual de Guajará-Mirim, on 26 April 1995. I confirmed by plumage characters (ochraceous underparts) and vocal differences from nominate *devillei* that these birds represented the race *subochracea*. Other state records of Striated Antbird exist only from 40 km west of Cachoeira Nazaré (Parker *et al.* 1997), where four specimens of the nominate race were taken in bamboo. Novaes (1976), however, reported specimens of *subochracea* from the nearby rio Aripuana,

and I recently confirmed the presence of this subspecies along its major tributary, the rio Roosevelt. Only *subochracea* has been found at Alta Floresta (Zimmer *et al.* 1997). Parker *et al.* (1997) noted that the distance between Cachoeira Nazaré and rio Aripuana is less than 250 km, with no apparent geographical barrier between them. These new records of *subochracea* confirm that both races occur south of the rio Ji-Paraná, with no major river barriers between the sites, and provide even stronger evidence of the theory that more than one species is involved (Zimmer & Isler 2003; pers. obs.).

Documented site records for Brazil are very few and scattered, thus any new documentation sheds light onto its Brazilian range. In 1992, I recorded a significant range extension for the species near the lower rio Juruá, along the Amazon at Caitau-uara, where I tape-recorded and observed nominate *devillei* in *Guadua* bamboo. I had previously collected the same taxon from the headwaters of the upper rio Juruá (Whittaker & Oren 1999).

Almost nothing is known of the species' breeding biology, except for a single report of a female entering an apparent domed nest in bamboo (Zimmer & Isler 2003). I observed a pair feeding a full-grown juvenile (in female plumage) at Parque Estadual de Guajará-Mirim on 27 April 1995.

THRUSH-LIKE ANTPITTA *Myrmothera campanisona subcanescens*

K. J. Zimmer and I noted, at Fazenda Rancho Grande in 1991, that the loudsong of this form is distinctly different from all other subspecies. Further extensive tape-recordings made by us throughout the range of *M. campanisoma*, including all of the Brazilian subspecies, convinced us that *subcanescens* exhibits consistent vocal differences both in loudsong and calls. We are currently examining vocal variation within the entire *M. campanisona* complex, with an eye toward possibly revising species limits. The race *subcanescens* is a Brazilian endemic found only south of the Amazon, east of the rio Madeira to the right bank of the rio Tapajós.

GREENISH ELAENIA *Myiopagis viridicata*

Fairly common in *terra firme* near Paakas Palafitas Lodge both in July 2002 and June 2003, when I tape-recorded and observed several individuals. The species typically inhabits gallery forest during the breeding season, so these records in *terra firme* outside the breeding season concern austral migrants. Stotz *et al.* (1997) recorded it as an uncommon austral migrant in low forest and second growth at Cachoeira Nazaré. The species is only a winter visitor to Peru and the states of Acre and Rondônia in north-west Brazil (Chesser 1995). Much further east it has been recorded at Alta Floresta, Mato Grosso, also in *terra firme* forest, in August (Zimmer *et al.* 1997), where it is a presumed austral migrant.

LARGE ELAENIA *Elaenia spectabilis*

Common on Palafitas Island with multiple individuals in July 2002 and June 2003. Chesser (1997) reported it as an austral migrant in Bolivia north of c.18°S and I

recorded Large Elaenia as a common migrant breeder in *cerrado*, around Cuiabá, Mato Grosso, in September. However, in June and late-July visits I have found these areas completely lacking the species.

These presumed austral migrants were vocal, with the commonly heard single call note being tape-recorded (also heard on the breeding grounds; pers. obs.). I noted several hover-gleaning and feeding on *Cecropia* catkins on the river islands, where agonistic behaviour was also observed, suggesting territoriality on the wintering grounds. I have noted the species to be a fairly common austral visitor to successional vegetation on river islands in the Amazon and its major tributaries (pers. obs.).

PLAIN TYRANNULET *Inezia inornata*

This small tyrant flycatcher was fairly common, with multiple birds seen daily, at Guajará-Mirim in July 2002 and June 2003. Here I found the species in various habitats including on Palafitas Island, in *igapó*, second growth along the rio Mamoré and in oxbow lake vegetation. However, one was found at the edge of a small manioc field, uncharacteristically foraging 25-m high in the subcanopy of *terra firme*. Birds were rather vocal, regularly giving a long, very piculet *Picumnus*-like trill; this voice is very different from the more musical one heard in northern Argentina on the breeding grounds (pers. obs.). I have also noted this piculet-like voice commonly in the northern Pantanal, Mato Grosso, during the austral winter. Plain Tyrannulet is a known austral migrant to south-west Amazonia, with previous specimens from Rondônia (Stotz *et al.* 1997).

I believe these records refer to austral migrants, which were considered to be common in low forest at Cachoeira Nazaré in May–July by Stotz *et al.* (1997). The species is also known from the Brazilian Amazon in Acre (Chesser 1995), with unpublished observations from the upper rio Juruá in the austral winter (pers. obs.). It is also reported to occur in southern Amazonian Peru (Parker *et al.* 1982) and adjacent northern Bolivia (Gyldenstolpe 1945). Chesser (1997) listed it as a winter resident at Pando, El Beni and in northern dpto. Santa Cruz, above c.17°S.

SUBTROPICAL DORADITO *Pseudocolopteryx acutipennis*

My observations are the first Brazilian records and certainly refer to austral migrants. All records were from Palafitas Island in the rio Mamoré. A single observed at close range on 4 July 2002 had the distinctly bicoloured bill, black on the upper mandible and pink on the lower, indicative of an immature (Ridgely & Tudor 1994). A presumed second individual, also an immature, was observed shortly afterwards, 250 m away in another part of the island. A third record involved a lone bird, on 10 July 2002, c.1.5 km from the original site, and this bird was documented with video footage. It had an all-dark bill and was a presumed adult. On 21 June 2003, again on Palafitas Island, a doradito, presumably Subtropical, was briefly seen by S. L. Hilty and myself.

Prolonged close studies of these three birds, for a total of c.11 minutes, allowed for excellent field studies. All had two pale creamy-white wingbars and a dark smudge on the cheeks, forming a darker patch that was most notable at close range. No contrast in head to back colour was noted, with a uniform olive crown, back and wings. At close range I noted the first immature as having dark eyes and blue-grey legs. The birds were inquisitive, in response to 'pishing' approaching closer in the tall cane grass, which was abundant on the island and in which they were most frequently observed. Here they regularly clung to vertical stems and occasionally perched on larger horizontal leaves at c.12–36 cm, sallying into the dense cane grass before reappearing minutes later and often at some distance. I observed both wing- and tail-flicking, especially when the birds were agitated or nervous. One was observed moving through a recently burnt area with 1.5 m burnt canebrake and young *Cecropia*, climbing to 3.5 m in a burnt tree before dropping to forage in low semi-burnt canebrake.

Subtropical Doradito breeds locally in the Andes from northern Colombia to north-west Argentina, spreading into adjacent lowlands during the austral winter (Ridgely & Greenfield 2001). Chesser (1997) noted that in Bolivia during the breeding season the species is found at 2,200–3,550 m, but in the austral winter it reaches the adjacent departments of Santa Cruz, Cochabamba, El Beni and La Paz, where the species occurs in May–June, August, October and December, but never above 700 m.

I suggest that the species is easily overlooked especially as it is not vocal during the austral winter. Through more ornithological field work in the state at this season, Subtropical Doradito may prove to be a fairly regular visitor to Rondônia and possibly other parts of western Amazonian Brazil.

YELLOW TYRANULET *Capsiempis flaveola*

Several pairs were observed and tape-recorded in 2002 and 2003, at the margins of the oxbow lake at Pacaas Palafitas Lodge, where they only associated with dense stands of an unknown genus of small-leaf bamboo. An extensive area of bamboo, covering several km on the left bank of the rio Paakas Novos (following extensive deforestation), also held the species, where it was common. This active little tyrant shared such habitat with Stripe-necked Tody-tyrant *Hemitriccus striaticollis*. These records represent a range extension within Brazil from the nearest known records 600 km to the west at Alta Floresta (Zimmer *et al.* 1997), and seem to be the first documented for the state.

Yellow Tyrannulet seems to be very patchily distributed through much of Amazonia, with documented records south of the Amazon and west of the rio Madeira practically non-existent. I have collected specimens south of the Amazon at Caitau-Uara, Amazonas, in September 1992 (housed in the Museu Emilio Goeldi, Belém). These also seem to be the first documented from the rio Purús/rio Jurua interfluvium. Specimens are also known from the west bank of the rio Madeira, 60 km south-west of its confluence with the Amazon. Pacheco (1995) reported a

westward range extension involving a small population at Mamiraua, Amazonas, on the north bank of the Amazon.

SOUTHERN SCRUB FLYCATCHER *Sublegatus modestus*

Singles of this rather easily overlooked nondescript flycatcher were noted on four visits to Palafitas Island in July 2002 and once in June 2003. I closely observed and tape-recorded the single rising whistled note. Field identification was based on their brighter overall appearance, more contrasting underparts and bolder pale wingbars, versus the very similar but duller Amazonian Scrub Flycatcher *S. obscurior*. In Amazonia, Amazonian Scrub Flycatcher seems to be found strictly in upland tropical forest, where it inhabits open canopy, large treefall clearings, natural or man-modified forest edge, and in *várzea* on floodplains close to major rivers where dense *Guadua* bamboo occurs in the understorey (pers. obs.).

Southern populations (*brevirostris*) are at least partially migratory with winter records from Amazonian Peru, in Ucayali and Madre de Dios (Ridgely & Tudor 1994). Stotz *et al.* (1997) reported *S. modestus* as a rare austral migrant in second growth at Cachoeira Nazaré, and it was found during the austral winter in Bolivia north of 17°S, in June–September (Chesser 1997). During the austral winter I have observed migrant *modestus* in large stands of *Guadua* bamboo in Manu National Park, Madre de Dios, Peru, in river floodplains within *várzea*. Here, during the austral winter, I have found *modestus* to be syntopic with resident Amazonian Scrub Flycatcher, which was once considered a subspecies of *modestus* (Traylor 1982).

ZIMMER'S TODY-TYRANT *Hemitriccus minimus*

This easily overlooked tyrant flycatcher was located by its distinctive voice, and tape-recorded and observed at the Taquaras *campina* forest, where two territorial birds were noted in July 2002 and June 2003. Singing in the higher forest substrate, its insect-like vocalisation is easily overlooked until known. This behaviour, combined with it inhabiting mostly forest canopy and subcanopy (only rarely coming lower), confirms why the species mostly is under-recorded. Now that field ornithologists are familiar with the voice, its known range has been greatly expanded (Zimmer *et al.* 1997, Cohn-Haft 2000, Borges *et al.* 2001). I have tape-recorded the species in Mato Grosso, at Fazenda Esperanca (near Bom Jesus de Araguaia) and at Xingu Refugio Amazônica, the rio Von Den Steinen, and K. J. Zimmer and I also tape-recorded it at Borba, in Amazonas, at Amazonia National Park, Caxiuanã and Carajás, all in Pará, and at Caseara, in Tocantins. The latter record is the first documentation of the species east of the rio Tocantins.

BUFF-CHEEKED TODY-FLYCATCHER *Todirostrum senex*

Despite being considered 'unknown in life' (Ridgely & Tudor 1994), I was able to identify the species based on familiarity with its vocalisations and appearance acquired at the type locality, where M. Cohn-Haft and B. M. Whitney (pers. comm.)

rediscovered it several years ago. They kindly alerted me to its presence and are currently preparing a paper concerning its natural history and taxonomic affinities.

On 12 July 2002 I located this little-known species at Taquaras by virtue of its distinctive voice (a rather loud, dry metallic trill) in dense stunted *campina*-type forest. Here I observed and tape-recorded several individuals, initially in July 2002 and again on 25 June 2003. This *campina* is on white sand and weathered clay that is poorly drained. I also found Zimmer's Tody-tyrant *Hemitriccus minimus* sympatric with Buff-cheeked Tody-flycatcher. Zimmer's Tody-tyrant mostly foraged in the higher forest substrate, whilst vocally Buff-cheeked Tody-flycatcher was the commoner of the two.

Even though July is the dry season here, the stunted *campina* had several small pools and muddy areas, and in June 2003 was even wetter, confirming that the area is flooded during the wet season (November–April). The canopy was fairly uniform in height (8–12 m), with low tree species diversity, dominated by 1.25–2.5-m *Melastoma* spp. in the understorey, with some of the forest floor covered by moss and low terrestrial bromeliads.

Following playback, two *T. senex* permitted approach to 3–4 m while they foraged in the fairly open understorey. They spent long periods foraging in *Melastoma* at 1–2 m, but also in lower branches of trees up to 4–5 m. Audible wing-whirr was very noticeable as they flew between perches and could be heard at 15–20 m. I noted short sally-gleans of 0.5–2.0 m to live leaves and occasionally to branches or trunks, and a 5-m diagonal sally was observed. The only identified prey was a 1-cm green *Orthoptera*, which was held in the beak and bashed repeatedly against a branch before being swallowed whole.

These records, along with unpublished observations by M. Cohn-Haft and B. M. Whitney (pers. comm.) from further north in Rondônia, are the first state records. My records represent a range extension of c.850 km south-southwest of Borba, the type locality. I have also recently tape-recorded the species along the lower rio Roosevelt, at Pousada Rio Roosevelt, Amazonas (08°29'S, 60°57'W), extending the known range further east. Whether the Rondonian or rio Roosevelt birds represent disjunct populations or whether the species is continuously distributed over this region, perhaps even in suitable habitat in adjacent Bolivia, requires further field and museum work.

Recent field work in white-sand areas has resulted in several noteworthy ornithological discoveries, including new taxa and rediscoveries (Whittaker 1994, Whitney & Alvarez Alonso 1998, Isler *et al.* 2001), re-emphasising the exceptional conservation importance of these unique forests. Alarming, from July 2002 to June 2003, subsistence farmers at Taquaras cleared several pristine areas of *campina* holding *T. senex*. Unfortunately, the ever-increasing human population of the area and the economic value of white-sand soil for the building construction trade, combined with subsistence farming, are now threatening this habitat before it has been biologically surveyed, much less protected.

FUSCOUS FLYCATCHER *Cnemotriccus fuscatus*

Very common and vocal around Paakas Palafitas on both visits, in *terra firme* clearings and along roads lined with bamboo through *terra firme*, second growth, *várzea* edge, river islands and *igapó*. Apparently a fairly common austral migrant to western Rondônia, residents in Amazonia occur only in early-successional vegetation on river islands (pers. obs). Stotz *et al.* (1997) recorded the species as a rare austral migrant at Cachoeira Nazaré, in lowland forest.

EULER'S FLYCATCHER *Lathrotriccus euleri*

Presumed austral migrants were uncommon and not very vocal in second growth bordering *terra firme* and *igapó* around Paakas Palafitas Lodge, in July 2002 and (rare) in June 2003. Interestingly, Euler's Flycatcher was found to be absent from the middle rio Ji-Paraná sites a little further north (Stotz *et al.* 1997).

OLIVE-SIDED FLYCATCHER *Contopus borealis*

This boreal migrant was observed at Rancho Grande on 29 and 31 January 1993, 24 January and 3 November 1995. All records were from the *terra firme*/second-growth ecotone, where they perched high in the canopy (mostly on dead snags). These are perhaps the first records for Rondônia, although scattered records are available from elsewhere in Amazonia (Cohn-Haft *et al.* 1997), and I have unpublished records from Alta Floresta (Mato Grosso) and the Serra dos Carajás (Pará).

VERMILION FLYCATCHER *Pyrocephalus rubinus*

Around Paakas Palafitas Lodge this distinctive tyrant flycatcher was very common in June 2003 and uncommon in July 2002. Several males were recorded in heavy body and tail moult. This species is an austral migrant, inhabiting *terra firme* edge, river islands and cattle pasture. Reported as a winter visitor to most of Bolivia except the extreme south (Chesser 1997). At Cachoeira Nazaré it is a rare austral migrant in second growth (Stotz *et al.* 1997).

LITTLE GROUND-TYRANT *Muscisaxicola fluviatilis*

This species' range in Brazil is very poorly known, with only two historical specimens—from Crato (just north of Humaitá), on the left bank of the rio Madeira, Amazonas, on 14 November 1829 (Pelzeln 1870); and at Milho, on the rio Jiparaná (c.150 km south-east of its mouth), Rondônia, on 19 June 1908 (Hellmayr 1910)—and several recent sight records. I recorded it as fairly common at Palafitas Island, in July 2002, where 3–4 were seen, mostly on sandbars, exposed mudbanks and occasionally in low scrubby successional vegetation close to the river's edge. However, in June 2003 only one was found. Stotz *et al.* (1997) reported the species as rare at Cachoeira Nazaré and other reports come from observations by P. Roth along the upper rio Aripuana, Mato Grosso in August–October (Pacheco 1994). Recent sightings from Amazonas include singles near Tefé, on 1 July 1993, and 30

km west of the lower rio Japurá, on 15 July 1993 (Pacheco 1994). I have unpublished records of several individuals along the upper rio Juruá, at Eirunepé, on 10 October 1991. Interestingly, all these records fall within the period of austral migration. Sick (1993) suggested that the species might appear in Brazil only during migration.

HUDSON'S BLACK-TYRANT *Knipolegus hudsoni*

On 20 June 2003, on Palafitas Island, I observed an adult male, and the following day S. L. Hilty and I observed both an adult male and female-plumaged bird. The adult male was territorial, repeatedly chasing the female-plumaged bird through low *Tessaria* scrub. However, males possess a female-type plumage following post-juvenile moult (Fjeldsá & Krabbe 1990), and thus females cannot certainly be separated from young males in the austral winter.

This species is an austral migrant to Brazil, previously recorded only from Mato Grosso, at Descalvados, in the Serra do Roncador in August–September (Sick 1985). It breeds in *chaco* woodland in central Argentina, from Córdoba south to Río Negro and south-west Buenos Aires provinces. Austral migrants are also known from nearby Bolivia, with a few records from Paraguay (Hayes 1995).

Formerly considered Near Threatened (Collar *et al.* 1992), I believe these river island observations are important, as they confirm yet another habitat for the species on its wintering grounds. During the austral winter, migrants have been reported from trees and bushes at woodland and road edges in Beni, Bolivia (Brace *et al.* 1996), and from Santa Cruz in *chaco*, weedy pasture and even gardens (Parker 1989). S. L. Hilty and I have recorded it in hedges, overgrown pasture and near windbreaks by sewage ponds in Santa Cruz.

BLACK-BACKED WATER-TYRANT *Fluvicola albiventer*

One observed on 11 July 2002 on Palafitas Island was feeding at the water's edge on exposed mudbanks. Recorded as a winter resident in Bolivia, from adjacent Santa Cruz and El Beni in June–November (Chesser 1997), and Peru (Parker *et al.* 1994), in Brazil it is an austral migrant to Acre, Rondônia (Chesser 1995) and south-east Mato Grosso (Willis & Oniki 1990).

RUFOUS CASIORNIS *Casiornis rufa*

Three records of this austral migrant: one observed and tape-recorded in the canopy of *terra firme* on the edge of a man-made clearing near Paakas Palafitas Lodge on 9 July 2002; a second heard in the canopy of *igapó* at Nova Colonia on 10 July 2002; and the last, a silent individual, in the Taquaras *campina* forest on 26 June 2003. Reported in low forest from the middle rio Jiparaná at Cachoeira Nazaré, where specimens were obtained in May and June (Stotz *et al.* 1997). Other Brazilian Amazon records (north of the Amazon) are from northern Pará (Sneath 1914) and in gallery forest c.50 km south of Porto Grande, Amapá (K. J. Zimmer, pers. comm.). South of the Amazon in Brazil the species is known from Acre (Stotz

et al. 1997) and Alta Floresta, northern Mato Grosso, in September, in isolated small deciduous forests on rocky outcrops within *terra firme* (Zimmer *et al.* 1997).

PALE-BELLIED MOURNER *Rhytipterna immunda*

At Taquaras *campina* 2–3 of this easily overlooked species were located in low, stunted and poorly drained sandy/clay forest by virtue of their distinctive voice, which was tape-recorded. Their resemblance to *Myiarchus* flycatchers, as already reported (Ridgely & Tudor 1994, Zimmer & Hilty 1997), is striking. In response to playback, they were rather shy and retiring, flying to the canopy of 8–10-m trees, where they briefly perched very alert before quickly retreating from sight. These documented records seemingly are the first for Rondônia. Known from specimens in the Museu Emílio Goeldi (Belém) taken in *campina* near Borba further down the rio Madeira, the nearest Brazilian records are from southern Mato Grosso (Ridgely & Tudor 1994).

BROWN-CRESTED FLYCATCHER *Myiarchus tyrannulus*

Remarkably common austral migrant with multiple birds recorded daily, although far more often heard than seen, as found mostly high in the canopy of *terra firme*. Also recorded in the canopy of *várzea* on mature river islands and along wooded banks of the rio Mamoré. Apparently present only in winter (June–October) in adjacent northern Bolivia (Chesser 1997). At Cachoeira Nazaré presumed austral migrants were recorded twice in low forest in June. At other Amazonian sites in Brazil, known from specimens taken in the austral winter in Acre and Rondônia (Chesser 1997) and at Alta Floresta, Mato Grosso, in August–September (Zimmer *et al.* 1997). However, there are isolated resident breeding populations in Amazonian savannas, at Alta do Chão, Pará (Sanaiotti & Cintra 2001) and the lower rio Xingu, including Parque Indígena do Xingu (pers. obs.). The complete lack of other published records outside the austral winter from most of the Amazon basin confirms that the species is almost exclusively an austral visitor to the Brazilian Amazon and that it is commoner in south-west Amazonia.

YELLOW-THROATED FLYCATCHER *Conopias parva*

This canopy flycatcher was very uncommon at Nova Colonia, on 8 July 2002, and was observed and tape-recorded at Taquaras *campina*, on 12 July 2002, where it was found accompanying a small mixed-species flock. The record from Nova Colonia, in south-west Rondônia, quite probably represents the species' southernmost locality.

The species' canopy habits, where it occurs exclusively in the upper strata mostly of *terra firme*, make it especially prone to be overlooked (Whittaker & Oren 1999, Alvarez Alonso & Whitney 2003), unless its distinctive voice is known (pers. obs.). Until recently, this has caused large gaps and poor representation of its true range in the literature, especially south of the Amazon (Ridgely & Tudor 1994). Brazilian records south of the Amazon are one from Urucu, Amazonas (Peres &

Whittaker 1991) and the upper rio Juruá, Acre (Whittaker & Oren 1999), the latter overlooked by Alvarez Alonso & Whitney (2003). However, Alvarez Alonso & Whitney (2003) reported a series of new observations by B. M. Whitney south of the Amazon in Brazil, from the west bank of the lower rio Tapajós west to extreme western Acre, and south along both banks of the rio Madeira in northern Rondônia. I also have voucher tape-recordings documenting Yellow-throated Flycatcher south of the Amazon, from Amazonas along the rio Mapiá, near Borba, and in the extreme west of the state on the Peruvian border, along the rio Javari, at Palmari Lodge, in August 2002. Recent north-bank records from west of the rio Negro are available from Jaú National Park (Borges *et al.* 2001). I also have tape documentation both north and south of Jaú National Park, with a pair c.35 km east of Manacapuru, Ziggylândia, and a nesting pair tape-recorded and observed at Barcelos, Amazonas, on 20 December 1997. This pair was seen carrying nest material to a hollow 20 m up in an isolated tree, in second growth some 100 m from virgin *terra firme*.

I found Yellow-throated Flycatcher and Three-striped Flycatcher *Conopias trivirgata* together at Ziggylândia, Amazonas, where I have observed both in the canopy of *terra firme*, but never in the same canopy flock. Possibly *C. trivirgata* is more restricted, in these areas, to black-water transition (only occasionally venturing into *terra firme*), which borders *terra firme*, and *C. parva* is exclusively restricted to upland *terra firme*.

Increased field work by ornithologists familiar with Yellow-throated Flycatcher's voice will surely bring greater insight into its precise Amazonian range. However, the reported absence in Rondônia from both the middle rio Ji-Paraná (Stotz *et al.* 1997), and Rancho Grande, where experienced field workers familiar with its voice have failed to find it, suggests that the species is rather local and patchily distributed east of the rio Madeira. The species' patchy distribution was also noted by Alvarez Alonso & Whitney (2003), who suggested that it occurs only in forests on sandy and other nutrient-poor soils.

YELLOW-BROWED TYRANT *Satrapa icterophrys*

One observed by S. L. Hilty and I on Palafitas Island, on 20 June 2003, in early-successional growth including *Tessaria* and canebrake, seemingly represents the first state record and presumably was an austral migrant. Chesser (1997) reported Yellow-browed Tyrant as an austral migrant (June–October) to northern Bolivia. Amazonian records are few, although Ridgely & Tudor (1994) reported it to be less numerous further north, where it apparently occurs only as an austral migrant, noting one record from Manaus, Amazonas. This record involved a bird I observed nest building at Machantaria Island, in the Amazon, on 30 August 1992. Subsequent visits, over several years by various ornithologists, failed to produce any further records on this or other nearby river islands. I therefore suggest this breeding record to have been exceptional. In the northern Pantanal, Mato Grosso, it is a not uncommon austral migrant (pers. obs.).

BLACK-NECKED RED-COTINGA *Phoenicircus nigricollis*

Two observed and tape-recorded by S. L. Hilty and myself in *terra firme* near Paakas Palafitas Lodge, on 23 June 2003, was the second state record, following the report of one observed and tape-recorded at Parque Estadual de Guajar-Mirim, in April 1995 (Whittaker 1996a). It seems highly probable that the species also occurs in adjacent north-east Bolivia.

BLACK MANAKIN *Xenopipo atronitens*

This sandy soil specialist was fairly common in the Taquaras *campina*, where several adult males and female-plumaged birds were observed and tape-recorded. This seems to be the first state record, with the nearest known populations being in north-east Bolivia, in Santa Cruz, on the Serrana de Huanchaca (Ridgely & Tudor 1994). In Brazil the nearest site for *Xenopipo* is in south-west Mato Grosso (Ridgely & Tudor 1994). My record represents a range extension within the Madeira drainage of c.850 km from Borba, from where there are specimen records (Pinto 1944).

SOUTHERN ROUGH-WINGED SWALLOW *Stelgidopteryx ruficollis*

Presumed austral migrants involved flocks of 50+ along the rio Mamore, in July 2002, swelling local residents, which almost never flock (pers. obs.). However, no large numbers were noted in June 2003. Southern populations are migratory, moving north in Brazil (Pereyra 1969), with birds from Rio Grande do Sul largely absent in mid February to mid August (Belton 1985). I have also observed larger numbers of the species, with flocks of over 100, along several major Amazonian rivers in the austral winter (pers. obs.). However, the full extent of their winter range in the Amazon is unclear and difficult to document due to the species being a common resident throughout the region.

TOOTH-BILLED WREN *Odontorchilus cinereus*

This canopy species was observed and tape-recorded near Paakas Palafitas Lodge in mixed-species canopy flocks in *terra firme*, where it was fairly common and very vocal, especially in June 2003. R. S. Ridgely, K. J. Zimmer and I found it very common at Fazenda Rancho Grande, where on 25 April 1991 a pair was observed carrying twigs to a nest cavity 20 m high at the edge of *terra firme*. The pair was also seen in courtship display and any other birds approaching the nest were chased aggressively. Stotz *et al.* (1997) reported the species as common at Cachoeira Nazare and uncommon at Pedra Branca. At Alta Floresta, Mato Grosso, Zimmer *et al.* (1997) reported it to be uncommon. The species also occurs in adjacent north-east dpto. Santa Cruz, Bolivia (Bates *et al.* 1989, 1992).

CREAMY-BELLIED THRUSH *Turdus amaurochalinus*

Austral migrants to Rondonia were recorded as rather uncommon around Paakas Palafitas, mostly in second growth and *terra firme* edge. Further north, it was absent

at Pedra Branca and uncommon at Cachoeira Nazaré (Stotz *et al.* 1997). However, the species is mostly absent or very rare east of here in Amazonia (pers. obs.). Recorded as common 700 km to the south-east, where up to 10,000+ roost annually in the bamboo understorey of *terra firme* at Flor del Ouro, Noel Kempff Mercado National Park, Santa Cruz, Bolivia, in July (S. L. Hilty & A. Whittaker pers. obs.).

PEARLY-BREASTED CONEBILL *Conirostrum margaritae*

I initially observed an adult feeding an immature in low *Cecropia* on a Bolivian river island adjacent to Palafitas Island, in the rio Mamoré, on 11 July 2002. In June 2003, S. L. Hilty and I documented this new record for Bolivia when we tape-recorded and observed several small groups on the same island in *Cecropia*-dominated stands of trees. I also observed and tape-recorded a pair of Chestnut-vented Conebills *C. speciosum* in the same *Cecropia* stand. On the Amazon, near Manaus, at Machantaria Island, Amazonas, I have recorded Pearly-breasted, Chestnut-vented and Bicoloured Conebills *C. bicolor*, which might represent the first documentation of these conebills occurring syntopically.

The most commonly heard voice is a complex series of fast musical twittering notes, which sounds as if several birds are singing concurrently, but often involves only a single bird singing within a small group. I have found the species to always be very responsive to playback.

This appears to represent the first record for Bolivia. Previously, *C. margaritae* was known only from the lower rio Madeira near Borba (Peters 1968), where I observed it in 2001. Known elsewhere in Brazil from along the middle Amazon, from the mouth of the rio Jamundá to the mouth of the rio Negro (Ridgely & Tudor 1989), the Bolivian records represent a range extension of c.1,050 km. Pearly-breasted Conebill probably has a continuous range along the entire Amazon in Brazil, a supposition supported by my tape-recordings and specimens from Caitau-Uara, in September 1992, which extended the range some 600 km west.

SLATE-COLOURED SEEDEATER *Sporophila schistacea*

Several singing adult males and immature males (in female plumage) were tape-recorded, and small loose flocks of 5–8 were observed, at Paakas Palafitas in June 2003. They were associated with small agricultural clearings in *terra firme*, especially where dry-land rice was being cultivated. Two or three were also observed at Parque Estadual Guajará-Mirim in forest borders close to small patches of bamboo and overgrown cattle pasture. An adult male tape-recorded singing on 27 January 1995 at Rancho Grande was the only record for the site; it frequented a recently burned forest edge bordering grassland.

At Paakas Palafitas males were observed singing mostly from concealed perches at the forest edge, usually at 4–8 m, but reaching 11–12 m after playback. Singing birds were very territorial, being extremely responsive to playback and affording excellent close studies. The large yellow bill was very obvious on adult males, which showed pink gapes when singing. Other field marks noted on this

basically grey bird were the two small symmetrical white spots on the lower neck and darker grey centre to the throat, with a white mid belly.

Previously recorded in Rondônia only from Cachoeira Nazaré, where it was reported as rare (only two March records) and fairly common at nearby Pedra Branca in *terra firme* and secondary forest, in February (Stotz *et al.* 1997). Stotz *et al.* (1997) suggested the species might be nomadic, as found by Parker *et al.* (1982) in south-east Peru. In Costa Rica, Willis & Eisenmann (1979) and Stiles & Skutch (1989) noted that Slate-coloured Seedeater is possibly an irruptive species following bamboo seeding, as in Panama. However, my observations, and those of Stotz *et al.* (1997) in Rondônia, confirm that the species also occurs in areas lacking bamboo, as at two of the sites where I located it bamboo was absent. In Acre, west Amazonian Brazil, Whittaker & Oren (1999) found the species to be only associated with bamboo.

Recent deforestation in Rondônia and elsewhere in the Amazon has resulted in the cultivation of dry rice in small agricultural settlements, which seems to be a very important alternative food resource for the species (pers. obs.). Stotz *et al.* (1997) noted that stomach contents of nine specimens taken at Pedra Branca contained rice, which was being harvested. This newly available food, combined with increasing bamboo as a result of the creation of forest gaps (Janzen 1983, Marcus 1983), may lead to an increasing and more widespread population of the species within Amazonia.

DARK-THROATED SEEDEATER *Sporophila ruficollis*

S. L. Hilty and I observed an adult male at Palafitas Island on 20 June 2003, along with three unidentified female seedeaters. In Brazil known previously only from Mato Grosso, Goiás, São Paulo and in Minas Gerais, at Pirapora in September (Sick 1985). This is apparently the first state record and confirmation that the species occurs on river islands in early-successional growth. Significant numbers have been recorded in Bolivia at Noel Kempff Mercado National Park, some 700 km to the south-east, with estimated numbers reaching 16,160 (Pearce-Higgins 1996).

RUFOUS-RUMPED SEEDEATER *Sporophila hypochroma*

S. L. Hilty and I observed an adult male of this Near-Threatened species on Palafitas Island on 19 June 2003. It was perched atop a 6-m *Tessaria* in sunlight, and its calls were tape-recorded. This bird was in an area of early-successional vegetation with much seeding grass and sedges. For comparison, we recorded at least three other species of unidentified female-plumages seedeaters associated with several adult male Chestnut-bellied Seedeaters *S. castaneiventris*.

The few documented records of this rare species in Brazil are from the southern Pantanal, east of Corumbá, Mato Grosso do Sul, at Emas National Park, Goiás, in October 1979, and south-west Goiás, in October 1984 (Ridgely & Tudor 1989). I photographed an adult male in the northern Pantanal, at Pixiam, Mato Grosso, on 4 November 1996, in flooded grassland bordering a small marsh. Ridgely & Tudor

(1989) suggested that the species might be an austral migrant. The Rondônia record confirms that the species certainly wanders further north in the austral winter, but to what extent and how important river islands are to this species at this season is unknown. It also represents a new state record and a significant extension of its known range. The species is, however, known to be a regular austral migrant *c.* 700 km south-east in Noel Kempff Mercado National Park, Bolivia, where estimates of 4,480 individuals were reported in August–September 1994 (Pearce-Higgins 1996).

YELLOW-SHOULDERED GROSBEAK *Parkerthraustes humeralis*

Fairly common in mixed-species canopy flocks at Fazenda Rancho Grande. Reported as uncommon at Cachoeira Nazaré (Stotz *et al.* 1997). On 25 April 1990, at Fazenda Rancho Grande, I observed two in the canopy of *terra firme* in the bare crown of an emergent, with sluggish movements, sallying 1–3 m after a hatch of winged termites or ants.

To my knowledge there are no known breeding records of the species. Whilst observing a pair in the upper midstorey of *terra firme* at Parque Estadual de Guajará-Mirim, on 24 April 1995, I noted one carrying a *c.* 3.5 cm-long green leaf to the crown of a 35–40-m emergent. Two further nesting records are from Alta Floresta, Mato Grosso: in early May 2003, A. Lees (pers. comm.) observed one carrying nesting material in the canopy, and on 29 June 2003 A. Kirschel (pers. comm.) watched a pair repeatedly carrying large green leaves to the crown of a 50-m emergent in *terra firme*.

The most frequently heard vocalisation is a high-pitched two-syllable note (easily overlooked), the second note rising in pitch, repeated every 3–7 seconds, often from an exposed forest canopy perch. In response to playback from canopy towers, I have observed birds puff out their plumage, cock the tail almost vertically and hold it there, while flicking their wings and exposing their striking yellow shoulders (which are normally partially concealed). Maintaining this odd stance, birds often sang a more complex series of musical twittering notes (similar to the song of Palm Tanager *Thraupis palmarum*). I have also tape-recorded this complex voice, without playback, in the canopy of *terra firme* in early December at the rio Cristalino, Mato Grosso.

Remarks

The results of this survey augment the growing pool of knowledge concerning Rondônia avifauna, but most of the state is still ornithologically extremely poorly known (Oren & Albuquerque 1991). The recent discovery of a new primate in the state (Ferrari & Lopes 1992) further emphasises the necessity of further field work. The results of my preliminary ornithological surveys again underline how little is known of the state's avifauna and how much remains to be discovered. Initial surveys of a white-sand forest *campina* in Rondônia have discovered the poorly known Buff-cheeked Tody-flycatcher and several other specialists of this habitat

not previously recorded in the state. Soil mosaics within the Amazon basin are complex and dramatically modify vegetation types (Gentry 1988), which in turn have a major effect on the fauna and play an important role in defining species distributions throughout the Amazon (Gentry 1990).

These results emphasise not only the importance of these *campina* and *campinarana* forests for endemic and poorly known birds, but also how fragile they are to human disturbance. Rondônia's ever-increasing population and expansion into untouched natural areas of the state requires immediate attention from conservation organisations or the future of its rich biodiversity and endemic fauna and flora may prove very bleak. A major inventory of plants and animals and their ecological requirements is urgently required throughout Rondônia, encompassing all of the major biomes, to establish priority areas for future conservation.

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